

WHAT IS CLAIMED IS:

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1. A solid-state image pickup device comprising a photoelectric converter, an input terminal for a signal amplifier, a transfer switch for transferring an electric charge from the photoelectric converter to the input terminal and a reset switch for applying a reset voltage to the input terminal, wherein said device is adapted to input a pulse signal to the reset switch and the transfer switch in order to turn on said reset switch and said transfer switch simultaneously.

2. A solid-state image pickup device according to claim 1, wherein said reset voltage applied to the input terminal by means of said reset switch is selected to be higher than the depletion voltage defined as a reverse bias voltage sufficiently high for substantially depleting the semiconductor region of said photoelectric converter.

3. A solid-state image pickup device according to claim 1, wherein said photoelectric converter comprises a buried type photodiode.

4. A solid-state image pickup device according to claim 1, wherein said transfer switch is a switch for depletion-transferring the electric charge stored in said photoelectric converter.

5. A solid-state image pickup device according to claim 1, wherein said transfer switch is a switch for transferring the electric charge stored in said photoelectric converter, leaving part of the electric charge in said photoelectric converter.

6. A solid-state image pickup device according to claim 1, wherein the reset voltage is so selected as to make the potential energy of said input terminal lower than the potential energy of said photoelectric converter when said transfer switch and said reset switch are on.

7. A solid-state image pickup device according to claim 1, wherein said transfer switch is made half-open to cause any excessive electric charge to flow to said input terminal during the storage period of the device.

8. A solid-state image pickup device according to claim 1, wherein the resetting operation of turning on both said transfer switch and said reset switch is conducted on a row by row basis for the photoelectric converter.

9. A solid-state image pickup device according to claim 1, wherein the resetting operation of turning on both said transfer switch and said reset switch is

conducted at once for all the rows.

10. A solid-state image pickup device according to claim 1, wherein the resetting timing of turning on both said transfer switch and said reset switch is modified depending on the quantity of light entering said photoelectric converter.

11. A solid-state image pickup device according to claim 1, wherein said photoelectric converter, said input terminal for a signal amplifier and said transfer switch are arranged on a same semiconductor substrate.

12. A solid-state image pickup device according to claim 1, wherein said input terminal is a diffusion region.

13. A solid-state image pickup device according to claim 1, wherein said photoelectric converter is a photodiode comprising a first semiconductor region of a first conductivity type formed in a semiconductor substrate, a second semiconductor region of a second conductivity type located within said first semiconductor region and a third semiconductor region of the first conductivity type located between said second semiconductor region and an insulation film formed on the principal surface of the semiconductor

substrate.

14. An image input apparatus comprising:  
a solid-state image pickup device as defined in  
claim 1; and

a mechanical shutter for defining the exposure  
time of the solid-state image pickup device.

15. An image input apparatus according to claim  
14, wherein the photoelectric charge storage period is  
defined by the resetting operation of said solid-state  
image pickup device and the opening/closing operation  
of said mechanical shutter.

16. A method of resetting a solid-state image  
pickup device as defined in claim 1, comprising a step  
of turning on said reset switch and said transfer  
switch simultaneously, before storing an electric  
charge, to eliminate an electric charge of said  
photoelectric converter.

17. A solid-state image pickup device comprising  
a photoelectric converter, an input terminal for a  
signal amplifier, a transfer switch for transferring an  
electric charge from the photoelectric converter to the  
input terminal, a reset switch for applying a reset  
voltage to the input terminal and a circuit for

generating a pulse signal in order to turn on said reset switch and said transfer switch simultaneously.

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5 18. A solid-state image pickup device according to claim 17, wherein said reset voltage applied to the input terminal by means of said reset switch is selected to be higher than the depletion voltage defined as a reverse bias voltage sufficiently high for substantially depleting the semiconductor region of  
10 said photoelectric converter.

15 19. A solid-state image pickup device according to claim 17, wherein said photoelectric converter comprises a buried type photodiode.

20 20. A solid-state image pickup device according to claim 17, wherein said transfer switch is a switch for depletion-transferring the electric charge stored in said photoelectric converter.

25 21. A solid-state image pickup device according to claim 17, wherein said transfer switch is a switch for transferring the electric charge stored in said photoelectric converter, leaving part of the electric charge in said photoelectric converter.

22. A solid-state image pickup device according

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5 to claim 17, wherein the reset voltage is so selected as to make the potential energy of said input terminal lower than the potential energy of said photoelectric converter when said transfer switch and said reset switch are on.

10 23. A solid-state image pickup device according to claim 17, wherein said transfer switch is made half-open to cause any excessive electric charge to flow to said input terminal during the storage period of the device.

15 24. A solid-state image pickup device according to claim 17, wherein the resetting operation of turning on both said transfer switch and said reset switch is conducted on a row by row basis for the photoelectric converter.

20 25. A solid-state image pickup device according to claim 17, wherein the resetting operation of turning on both said transfer switch and said reset switch is conducted at once for all the rows.

25 26. A solid-state image pickup device according to claim 17, wherein the resetting timing of turning on both said transfer switch and said reset switch is modified depending on the quantity of light entering

said photoelectric converter.

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5 27. A solid-state image pickup device according to claim 17, wherein said photoelectric converter, said input terminal for a signal amplifier and said transfer switch are arranged on a same semiconductor substrate.

10 28. A solid-state image pickup device according to claim 17, wherein said input terminal is a diffusion region.

15 29. A solid-state image pickup device according to claim 17, wherein said photoelectric converter is a photodiode comprising a first semiconductor region of a first conductivity type formed in a semiconductor substrate, a second semiconductor region of a second conductivity type located within said first semiconductor region and a third semiconductor region of the first conductivity type located between said  
20 second semiconductor region and an insulation film formed on the principal surface of the semiconductor substrate.

25 30. An image input apparatus comprising:  
a solid-state image pickup device as defined in claim 17; and  
a mechanical shutter for defining the exposure

time of the solid-state image pickup device.

31. An image input apparatus according to claim  
30, wherein the photoelectric charge storage period is  
5 defined by the resetting operation of said solid-state  
image pickup device and the opening/closing operation  
of said mechanical shutter.

32. A method of resetting a solid-state image  
10 pickup device as defined in claim 17, comprising a step  
of turning on said reset switch and said transfer  
switch before storing an electric charge to eliminate  
the electric charge of said photoelectric converter.

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